

What Is Claimed Is:

- 1 1. A method of signal path tracking for symbol timing
2 recovery in a receiver, comprising the steps of:
3 providing current sampling points for a received signal to
4 generate current symbols according to a timing
5 scheme;
6 detecting optimal points of the current symbols for
7 sampling the received signal;
8 computing an expected error from the current sampling
9 points and the optimal points; and
10 adjusting the timing scheme to generate a future sampling
11 point for a subsequent symbol according to the
12 expected error, thereby recovering symbol timing of
13 the receiver.

- 1 2. The method according to claim 1, wherein computing the
2 expected error further comprises:
3 comparing the current sampling points with the optimal
4 points to obtain timing differences;
5 filtering the timing differences to obtain an average
6 moving error; and
7 integrating the average moving error to obtain the expected
8 error.

- 1 3. The method according to claim 2, wherein filtering the
2 timing differences further comprises convolution and
3 accumulation of the timing differences.

1 4. The method according to claim 1, wherein the optimal
2 points for sampling the received signal correspond with
3 samplings of a maximum signal strength in each symbol duration.

1 5. The method according to claim 1, wherein computation
2 of the expected error occurs once every N symbols, and the
3 current sampling points and the optimal points for computing the
4 expected error are averages of the N current symbols.

1 6. The method according to claim 1, wherein the timing
2 scheme for sampling the received signal is adjusted to continue
3 alignment of a sampling clock transition with an optimal
4 sampling point computed by the expected error of a preceding
5 symbol.

1 7. A system of signal path tracking for symbol timing
2 recovery in a receiver comprising:

3 a symbol sampler, sampling a received signal at current
4 sampling point according to a timing scheme;
5 a peak detector, detecting optimal points for sampling the
6 received signal;
7 an error detector, computing an expected error from the
8 optimal points detected by the peak detector and the
9 current sampling points of the symbol sampler; and
10 a path tracker, computing a future sampling point of a
11 subsequent symbol and providing the future sampling
12 point to the symbol sampler to adjust the timing
13 scheme.

1 8. The system for symbol timing recovery according to
2 claim 7, the error detector further comprising:

3 a comparator, comparing the current sampling points of the
4 symbol sampler and the optimal points detected by the
5 peak detector to obtain timing differences;
6 a loop filter, filtering the timing differences received
7 from the comparator to obtain an average moving
8 error; and
9 an integrator, integrating the average moving error from
10 the loop filter to obtain an expected error.

1 9. The system for symbol timing recovery according to
2 claim 7, wherein the optimal points for sampling the received
3 signal correspond with samplings of a maximum signal strength
4 in each symbol duration.

1 10. The system for symbol timing recovery according to
2 claim 7, wherein the error detector computes the expected error
3 once every N symbols, and the current sampling points and the
4 optimal points for computing the expected error are averages of
5 N symbols.